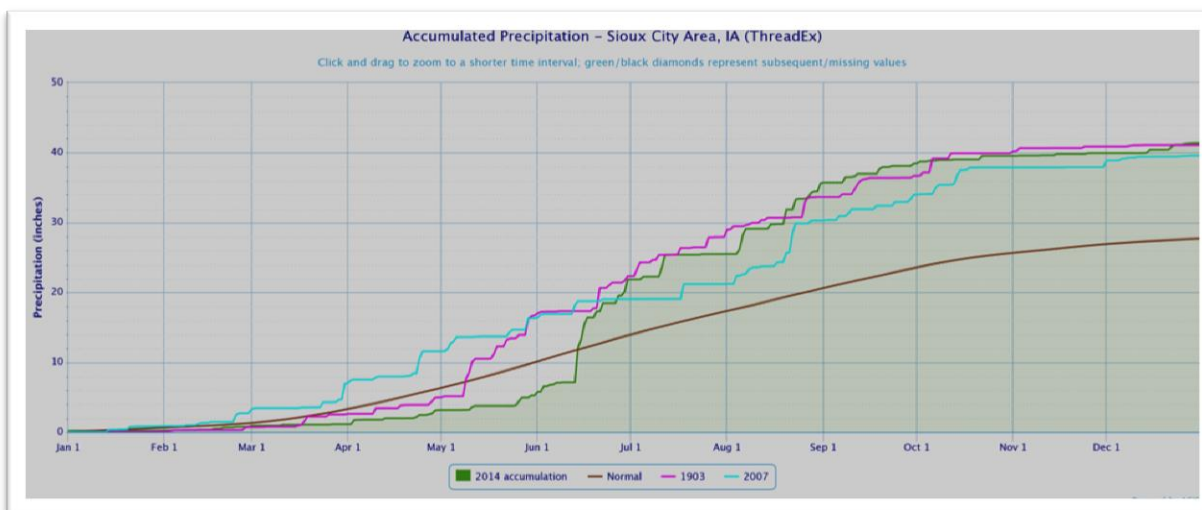
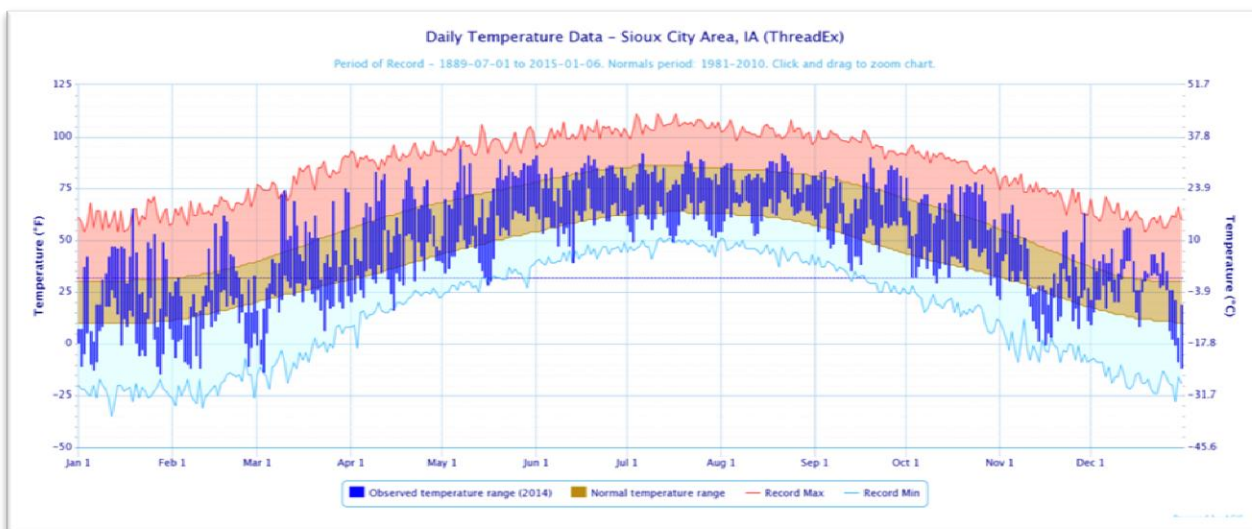


Weather for the Sioux City area during 2014 will almost certainly be defined by the extreme precipitation during the month of June.



For a little over five months, the precipitation for the year was lagging far behind normal. This was not to last, as an impressively wet period commenced in June. An encore of heavy rainfall was presented in August, and when topped off by a wet December, precipitation for the year reached 41.36 inches, an incredible 13.62 inches above normal. This ranked as the **wettest calendar year** in the period of record which runs from 1889 to present day. In some historical documents, there are records which indicate that extreme rainfall occurred outside this period of official record during 1881, which totaled 56.37 inches of precipitation for the year. During 2014, the months of June and August stood out, not only as the wettest for each particular month on record, but also as the overall **wettest and 4th wettest months** on record, respectively. The cold and fall transition seasons featured below normal precipitation, and to no surprise that the 28.9 inches of snowfall over the calendar year was 5.9 inches shy of normal. Even December, with above normal precipitation, had below normal snowfall thanks to much warmer than average temperatures.

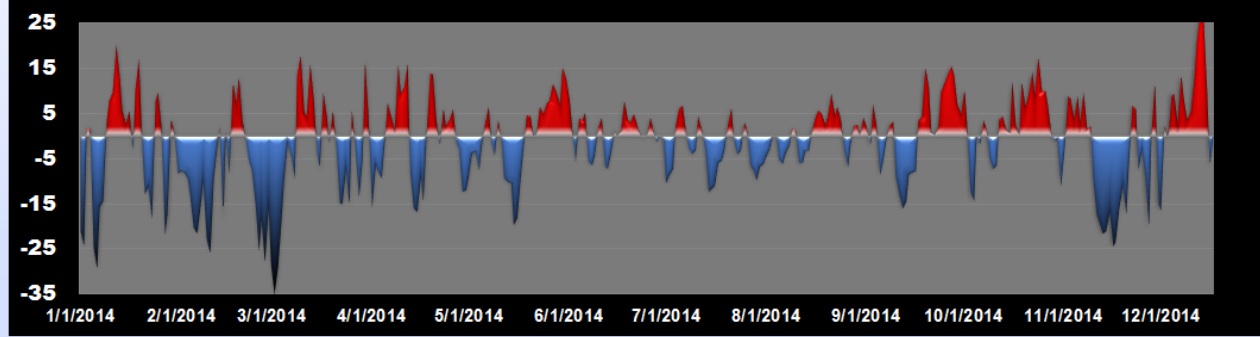
Sioux City, IA						
Month	Precipitation		Snowfall		Precipitation Rank	Max Wind Gust Direction/MPH/Date
	Amt	Departure	Amount	Departure		
January	0.19	-0.43	2.1	-4.6	13th driest	N 63 mph on 16th
February	0.58	-0.09	8.5	1.9	53rd driest	NW 49 mph on 15th
March	0.38	-1.62	4.7	-1.8	12th driest	S 54 mph on 26th
April	2.07	-0.88	5.3	3.5	56th driest	S 49 mph on 23rd
May	2.03	-1.71	0.0	0.0	26th driest	SW 45 mph on 8th
June	16.65	12.76	0.0	0.0	*WETTEST*	W 65 mph on 1st
July	3.61	0.17	0.0	0.0	47th wettest	SW 47 mph on 25th
August	10.12	6.89	0.0	0.0	*WETTEST*	SW 57 mph on 31st
September	2.79	-0.17	0.0	0.0	54th wettest	W 51 mph on 1st
October	1.13	-1.00	0.0	-1.0	46th driest	NW 48 mph on 3rd
November	0.41	-0.90	4.5	0.1	35th driest	N 45mph on 19th
December	1.40	0.60	3.8	-4.0	22nd wettest	NW 42 mph on 16th
Year	41.36	13.62	28.9	-5.9	*WETTEST*	W 65 mph on 6/1



Annual temperatures averaged out to 47.8 degrees, a half degree warmer than 2013, and 0.7 degree below normal. This was the 38th coldest year on record. As revealed in the daily temperature plot above, an abundance of days early in the year fell to the cold side of normal, as did frequent periods of July and November. In fact, these two months were the only months during the year that fell strongly toward the extreme, finishing 9th and 12th coldest for the particular month. The largest departure to the warm side occurred in December at 5.7 degrees above normal, but only resulted in the 30th warmest on record. The annual mean maximum temperature was 59.5 degrees, which was the 48th warmest on record despite being 0.3 degrees below normal. Minimum temperatures produced a greater proportion of the annual cooling, with an annual mean of 36.1 degrees (1.1 degrees below normal). The warmest temperature of the year was 94 degrees on May 7, and this tied for the fourth coolest maximum temperature recorded during a year, matching 1986, 1962 and 1950. In fact, there were only eight days with high temperatures of 90 or above, and this was the eighth fewest 90 degree days for any year on record, and far from the average of 21. The coolest reading of the year at -15 was attained on January 28. There were 30 days with low temperatures at or below zero, 13 more than normal.

Sioux City, IA							
Month	Average Temperature			Departure from normal	Extremes		Monthly Records
	Max	Min	Mean		High	Low	
January	32.6	4.1	18.3	-2.1	65	-15	58th coldest
February	30.6	6.8	18.7	-6.4	62	-12	32nd coldest
March	46.7	19.5	33.1	-3.4	75	-14	43rd coldest
April	62.9	36.2	49.6	0.0	85	16	60th warmest
May	75.9	49.2	62.6	1.8	94	28	37th warmest
June	81.6	59.6	70.6	0.3	91	39	57th warmest
July	81.7	59.7	70.7	-3.6	93	49	9th coldest
August	81.7	64.3	73.0	0.9	92	52	62nd warmest
September	75.8	52.8	64.3	0.9	90	35	57th warmest
October	66.7	39.3	53.0	2.3	80	23	46th warmest
November	41.8	20.1	31.0	-4.8	67	-1	12th coldest
December	35.5	21.1	28.3	5.7	56	-12	30th warmest
Year	59.6	36.2	47.8	-0.7	94	-15	38th coldest

....Daily Temperature Departures from Normal....



Very cold temperatures and light snowfall greeted the New Year in Sioux City, with snowfall of 1.2 inches on New Year's Day the greatest of the month. Other than a brief warmup on the 4th, the first eight days of the month were well below normal, accompanied at times by bitter northwest winds of 35 to 45 mph and wind chills of 25 below to 40 below zero. Temperature flipped to the warm side for the next week with highs in the 40s from the 11th to 16th eliminating the meager snow cover, not replaced during this 13th driest January on record. An arctic front blasted through the area on the 16th, bringing a light dusting of snow and northwest winds measuring 63 mph as light rainfall changed to snow early afternoon. The see-saw in temperatures would intensify mid to late month, with a record high of 65 degrees on the 19th followed a couple days later by below zero lows, and then the coldest reading of the month at -15 on the 28th. Changes within a day were even quite significant, with three days having more than a 50 degree diurnal change (19th – 52 degrees, 26th – 51 degrees, and the 29th – 54 degrees). Frequent wind chill events highlighted the last 10 days to close out January.

More of the same would come in February with wind and frigid temperatures, but with a little more frequent light snowfall during the month. Only eight days during February were above normal, but somewhat balanced extensive cold periods on both ends of the month to result in the 32nd coldest February on record. Snowfall would not come in large quantities, with the greatest on the 24th with 2.2 inches. However, snowfall would be above normal for the month, one of only two months during the year with more than an inch above normal snowfall.

Sioux City, IA					
Season	Average Temperature				Temperature Rank
	Max	Min	Mean	Departure	
Winter '13-'14	30.7	6.0	18.3	-4.3	24th coldest
Spring '14	61.8	35.0	48.4	-0.6	57th coldest
Summer '14	81.7	61.2	71.4	-0.9	26th coldest
Fall '14	61.4	37.4	49.4	-0.6	26th coldest

The winter season of Dec. 2013-Feb. 2014 with a mean temperature of only 18.3 degrees would go down as the 24th coldest on record, coldest since the winter of 2009-2010. In fact, there were 11 days

with low temperatures of -10 or colder, and this was the greatest number of days with lows of -10 or colder since 1983-1984. There were 27 days with lows below zero, the 15th most for a winter, and the most since 33 occurred in 1981-1982. Precipitation (0.95 inches – 8th driest) and snowfall (12.9 inches) were both well below normal for the period, and came in small amounts throughout the winter, with the greatest daily snowfall 2.2 inches on the 24th of February.

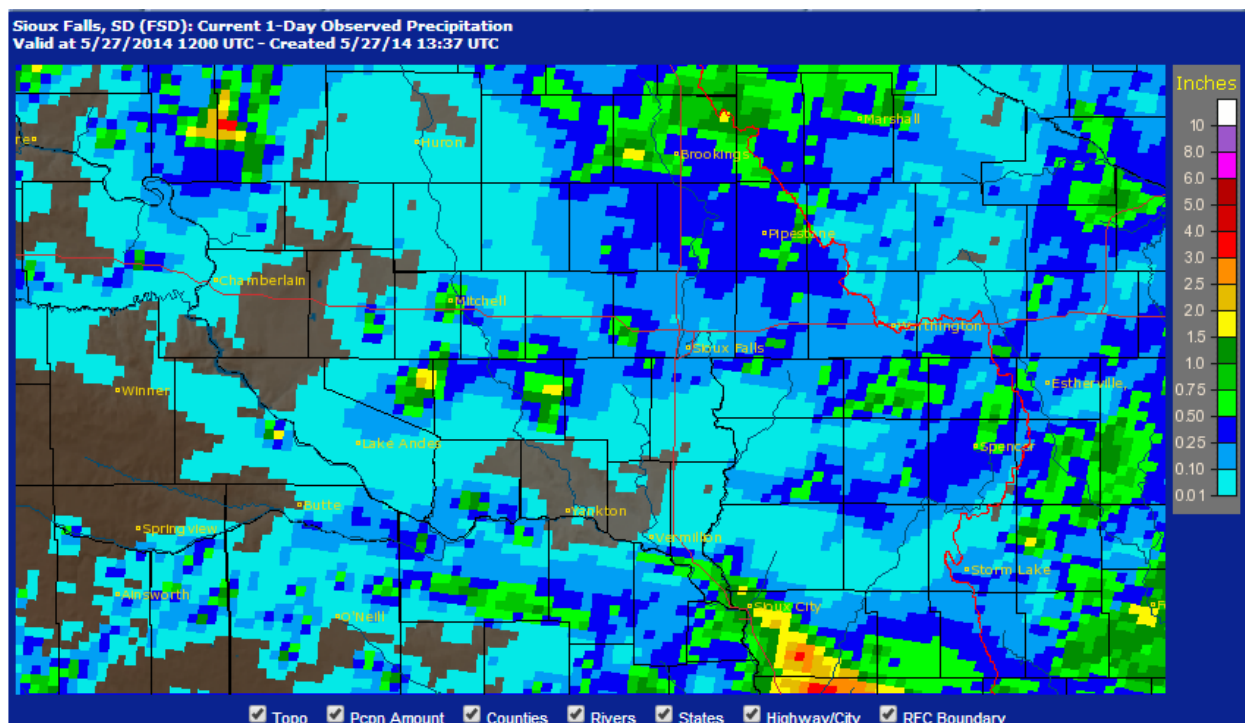
Sioux City, IA			
Season	Precipitation		Precipitation Rank
	Total	Departure	
Winter '13-'14	0.95	-1.14	8th driest
Spring '14	4.48	-4.21	15th driest
Summer '14	30.38	19.82	*WETTEST*
Fall '14	4.33	-2.07	44th driest

The calendar and meteorological season may have changed, but there was no way winter was going to give up as we entered March 2014, coming in as a very cold lion. The heaviest daily snowfall of the year of 4.5 inches came on the 1st, supporting a frigid start to the month. After coming up a degree short of a record low on the 2nd at -10, the afternoon temperature would reach only 2 degrees above, establishing a record low maximum for the date, and the **coldest March maximum ever recorded**. A morning low of -14 on the 3rd would set a record low. The first three days of the month were the coldest start on record by 4 degrees. Less than a week later, a sneak preview of spring would commence with a week of above normal temperatures, reaching record highs of 72 degrees on the 9th and 74 on the 10th. Fairly normal conditions persisted mid month, with another cold shot settling into Siouxland after the start of astronomical spring. Strong southerly winds on the 26th brought not only warmer air and enhanced fire danger, but also reduced visibility with blowing dust and dried crop debris from the fall harvest. This was immediately followed by another dusting of snowfall and the first thunderstorm of the year on the 27th. There could not have been much greater contrast between the start and finish to the month, as high temperatures of 75 and 73 degrees were found on the 30th and 31st. However, the temperature plunged from the high of 73 around noon, to 24 degrees by 8pm, accompanied by flurries. March had only 0.38 inches precipitation, and was the 12th driest March on record.

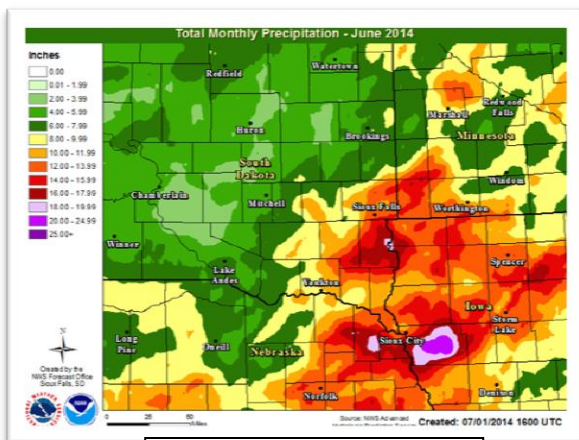
Conditions typical of spring were found in April, with wide temperature swings during the transition month. The mean temperature actually averaged to exactly normal, proving that sometime normal is just the average of abnormal. The month started chilly with snow on each of the three of the first four days, greatest with 3.5 inches on the 3rd-4th. A distinct warmup followed for the next week, with the first 80 degree day of the year on the 9th. A swing back to colder temps continued through mid-month, with a record low of 16 set on the 15th. This was the coldest reading recorded so late into the spring season. The final trace of snowfall of the season occurred on the 16th. By the end of the third week of the month, Sioux City had received only 38% of normal precipitation and was at the 4th driest start for the year. Around three quarters of an inch rainfall the final week pushed the month toward the median at

56th driest. Overall, it was another fairly windy month, with delayed green up coming out of the eternal winter bringing an enhanced fire danger at times.

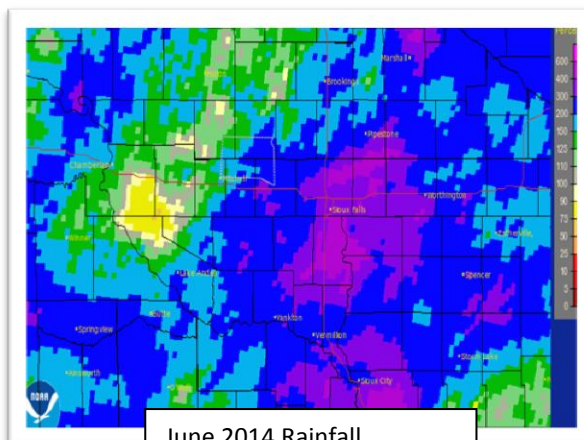
At long last in May, the average temperature of 62.6 degrees ended up 1.8 degrees above normal, the first such classification in eight months. “Normal” was again greatly absent, an artifact of the balance between a couple of anomalously cold stretches during the first two thirds and a very mild last third. The first four days were chilly, with some morning frost in outlying areas on the 2nd and 3rd. A record high of 94 degrees on the 7th was squeezed between two colder periods, and was the warmest reading of the year. About a week later, Sioux City would establish or tie record lows on three consecutive mornings (15th-17th). The low temperature of 28 degrees was the final freeze of the season on the 17th. Several thunderstorms occurred during the month, with winds gusts of 40 to 45 mph on the 11th, and slow-moving storms on the 26th-27th produced areas of heavy rainfall in the lower Missouri valley, with 2 to 4 inches in some locations - a harbinger of things soon to come.



The spring months of March through May accumulated less than just over 50 percent of normal precipitation as 15th driest on record. Snowfall was actually a bit above normal with 10.0 inches, despite the overall dry conditions. There were more numerous cold than warm streaks during the first half of the meteorological season, with the mean temperature of 48.4 degrees sitting just 0.6 degrees below normal, near the median at 57th coldest.

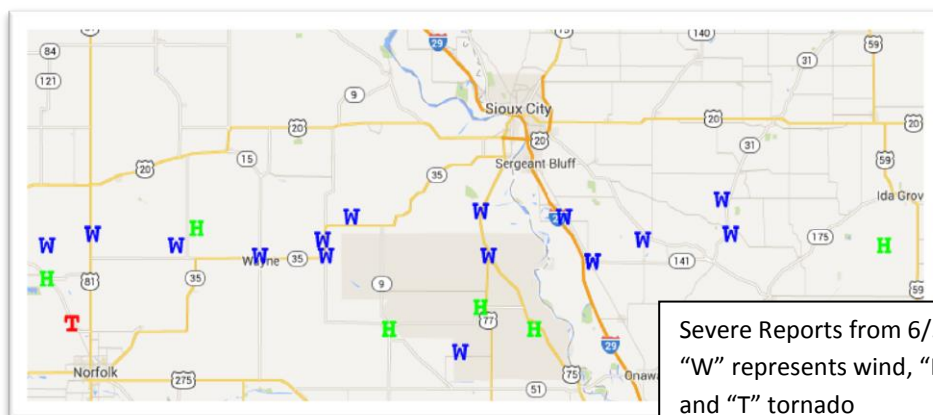


June 2014 Monthly Rainfall



June 2014 Rainfall
Departure From Normal

June marked a drastic turn from the dry conditions over the first five months of 2014. Rainfall on six of the first nine days was a tease, but did produce the areas first severe storms on the 1st when 60 to 70 mph winds swept through the region. The significant rainfall period really kicked into high gear on the afternoon of the 14th, when the next 24 hours would bring a **June 24-hour record 6.15 inches** of rainfall, with a **daily and monthly record 5.05 inches** occurring on the 14th (second only to 5.50 inches on July 17, 1972). Numerous heavy rain events later (thunder reported on 16 of 30 days during June), there was a record 16.65 inches of rainfall at month's end; not only the **wettest June on record**, but the **most precipitation for any month** on record in Sioux City. Record daily rainfall also occurred on the 30th (1.81 inches). The seven days with one-inch or greater rainfall not only set a record for June, but also for any month on record. The heavy rainfall across the area produced considerable flash flooding, especially on the 14th and early on the 15th, with considerable urban flooding. River flooding was also significant as local drainage and routed waters in the Big Sioux brought expectations of major flooding to the North Sioux City and Dakota Dunes areas, but levee overtopping upstream greatly limited the impact. Perry Creek north of Sioux City also flooded for the first time since 1990. Additional severe storms during the month included an EF2 tornado near Wakefield, NE on the 16th, an EF4 tornado northwest of Dixon, NE on the evening of the 17th, multiple storms with nickel to half dollar size hail across the side of the city on the 20th, and a swath of damaging winds from 60 to 70 mph producing tree damage south of Sioux City on the final day of the month. On a side note, a record low was set on the 13th with 39 degrees.



Severe Reports from 6/30/14.
"W" represents wind, "H" hail,
and "T" tornado

While precipitation was less frequent in July, and severe weather non-existent, there was still one more heavy rain event from late on the 11th through the 12th which brought a quick 3.07 inches to Sioux Gateway Airport. Only two days featured measurable rainfall after the 12th, and precipitation for the month topped out at 3.61 inches to make the 47th wettest July. While over 13 inches less rainfall than June, this was still 0.17 inches above normal. Much of this 9th coldest July was below normal, with only brief warmups of no more than two or three days above normal on three occasions during the month. Another summertime record low was set with 49 degrees on the 16th.

One month with record precipitation is rare, but two in three months is remarkable. Heavy rains returned during August, with 10.12 inches of rainfall making for the **wettest August on record**. Record daily precipitation was measured on the 20th with 2.12 inches. Severe weather was again rare in the Sioux City area, but the most significant event of the summer occurred on the final day of August. Extreme winds estimated at 80 to 90 mph blasted through Sergeant Bluff causing extensive large tree damage and structural damage to many homes. Temperatures ended the month a mere 0.9 degrees above normal; with the first half slightly cool and second half slightly warm. There were only two days of 90 degree heat, the fewest since 2008.

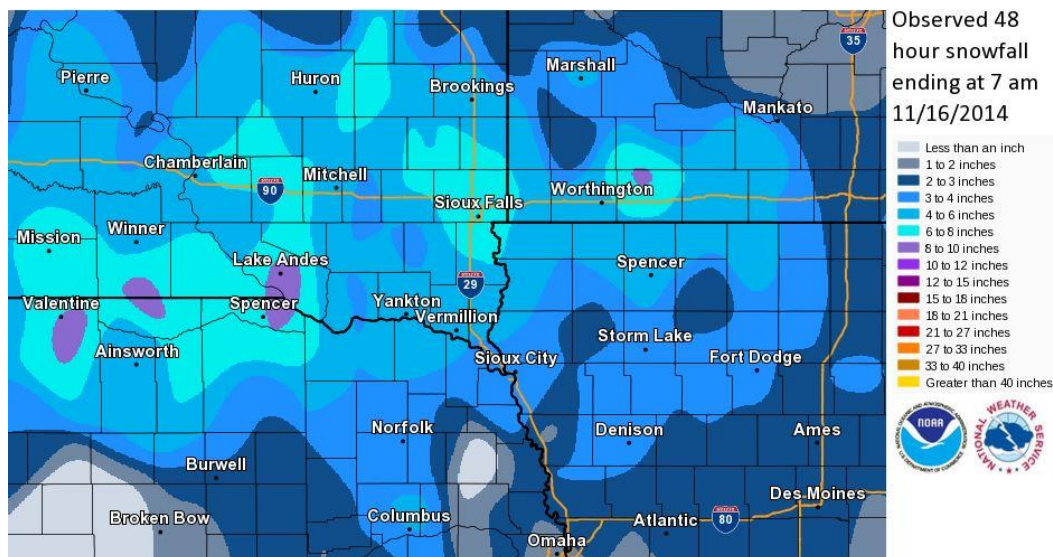
Powered by the excessively soggy June and August, the summer season rainfall from June through August was an overwhelming 30.38 inches, 19.82 inches above normal. This was the wettest summer on record, more than 50 percent greater than the second place season during 2010 (20.13 inches). The 13 days of inch or greater rainfall was also a record, not only for the summer season, but for any year. The average summer temperature (26th coldest) was also dominated by the 20th coldest average maximum temperature (81.7 degrees – with all three months within a tenth of a degree of each other!)

September was the most mild-mannered month of the year. There was a fairly sizable cool period from the 10th to the 16th, with a little frost in outlying areas on the morning of the 13th. Precipitation was a bit more modest and distributed, ending 0.17 inches below normal, with the greatest daily rainfall on the 8th at 0.78 inches. The monthly mean temperature of 64.3 degrees was 0.9 degrees above normal, and was fueled by very warm periods near the astronomical end of summer during which the warmest temperature of the month occurred (90 degrees on the 19th) and from the 24th to 30th.

Pleasant and quiet weather carried over into October, with an average temperature of 53.0 degrees, 2.3 degrees above normal. October was the third consecutive month of above normal temperatures. The first freeze of the season occurred on the 3th which ended the growing season at 138 days, well shy of the average length of 161 days. The hard freeze held off until the 29th, when the temperature dipped to 29 degrees, making for 165 days since the last hard freeze. Just over an inch of rain fell during the month, making the 46th driest October on record.

After a mild and quiet start to November, the month would take a drastic turn to the cold side after an early season arctic front on the 10th. The following days would yield the coldest 10 day period on record up to the 20th of November (mean 17.9 degrees), just eclipsing the first 10 days of Nov. 1991 after the infamous Halloween snowstorm. The first snowfall of the season was a paltry 0.4 inch on the 10th. However, this first snowfall was quickly chased by the second greatest daily snowfall of the calendar

year (and daily record) of a fluffy 4 inches on the 15th. This set the stage for a near record low on the 16th (-1 degrees), and a record low of 3 degrees on the 18th.



Temperatures were a bit more erratic toward month's end, with only one day greatly above normal, matching a record high at 63 degrees on the 29th. For the month, the mean of 31.0 degrees was the 12th coldest November on record. Despite precipitation less than one third of normal, snowfall totaled 4.5 inches and ended up a shade above normal. This was only the third month of the calendar year to experience above normal snowfall, and the most November snowfall since 2005.

Despite the below normal months being outnumbered 2 to 1 during the fall season, November was so far below normal that the fall months of September to November finished as the 26rd coldest on record. After the extremely wet summer, all three fall months recorded below normal precipitation, and the 4.33 inches of total precipitation made it the 44th driest fall season on record.

December was by far the cloudiest month of the year; with nearly half the month classified as "cloudy", averaging more than 80 percent cloud coverage from sunrise to sunset. In fact, there was a stretch of nearly a week where the sun was not viewed in the week before Christmas. December started on the cool side as a carryover from November, but by the 4th, temperatures were consistently above normal which persisted through the 15th. A three-day period above freezing during this period encompassed a record high minimum of 40 degrees on the 13th and 14th, the 12th warmest minimum temperatures on record for the month. A very brief cool period settled in mid month, and then it was back to well above normal readings through Christmas. Despite almost twice normal precipitation for the month, two mid-month rainfall events due to warm temperatures kept snowfall below normal at 3.8 inches. The largest snowfall of the month (1.1 inches) came on the 23th, but warm temps melted off before Christmas could arrive. Another snowfall on the 26th/27th arrived a bit tardy to stop the Sioux City metro from having a brown Christmas for the third time in the last four year. Strong arctic high pressure settled into the region to close out the year, with surface pressure adjusted to sea level near a record high at 31.01 inches on the 30th. Despite lows near -10 the final two days of the year, the overall abundance of

clouds during the month helped minimum temps average 21.1 degrees, placing 17th warmest on record. Overall, December was the 30th warmest on record.